

What is claimed is:

1. A method for determining optimal harvest window of medicinal plants, the method comprising the steps of:
 - harvesting at least one plant at a plurality of maturation stages for the plant;
 - adding a preparation of the plant to a cell culture;
 - harvesting the cell culture;
 - analyzing the cell culture for a level of a product the medicinal plant induces; and
 - observing the level of product corresponding to each of the different maturation stages.
2. The method of claim 1, further comprising the step of determining a concentration of a marker compound for each of the plants at the plurality of maturation stages.
3. A method for determining optimal harvest window of *Echinacea* plants, the method comprising the steps of:
 - harvesting at least one plant at a plurality of maturation stages for the plant;
 - adding a preparation of the plant to a cell culture;
 - harvesting the cell culture;
 - analyzing the cell culture for a level of an immune-stimulatory product induced by *Echinacea*; and
 - observing the level of the immune-stimulatory product corresponding to each of the different maturation stages.
4. The method of claim 3, further comprising the step of determining a concentration of a marker compound for each of the plants at the plurality of maturation stages.
5. The method of claim 4 wherein the marker compound is selected from a group consisting of chicoric acid, alkylamides, glycoproteins, polysaccharides and combinations thereof.

6. The method of claim 3 wherein the immune-stimulatory product is selected from the group consisting of cytokine mRNA and chemokine mRNA.

7. The method of claim 3 wherein the immune-stimulatory product is an mRNA transcript selected from the group consisting of IL-1 alpha, IL-1 beta, IL-6, IL-8, IL-10, tumor necrosis factor alpha, interferon-gamma and macrophage inflammatory protein-1.

8. A method of augmenting the immune-stimulatory effects of *Echinacea* extracts, the method comprising the steps of:

harvesting an *Echinacea* plant during a maturation stage that includes stages prior to full bloom;

drying the plant;

reducing the plant size; and

extracting the plant with a solvent.

9. The method of claim 8 wherein the maturation stage is vegetative.

10. The method of claim 8 further comprising the step of maintaining a standardized level of chicoric acid.

11. A method of augmenting the immune-stimulatory effects of *Echinacea* extracts, the method comprising the steps of:

harvesting an *Echinacea* plant during a maturation stage that is vegetative

drying the plant;

reducing the plant size; and

extracting the plant with a solvent.

12. An *Echinacea* preparation comprising:

a standardized concentration of chicoric acid; and

an augmented level of immune-stimulatory activity;

wherein the preparation was obtained from an *Echinacea* plant harvested during a maturation stage prior to full bloom.

13. The preparation of claim 12, wherein the augmented level of immune-stimulatory activity is measured by inducement in THP-1 cells of an mRNA transcript selected from the group consisting of: IL-1 alpha, IL-1 beta, IL-6, IL-8, IL-10, tumor necrosis factor alpha, interferon-gamma and macrophage inflammatory protein-1.

14. The preparation of claim 12, wherein the augmented level of immune-stimulatory activity is measured by inducement in THP-1 cells of an mRNA transcript selected from the group consisting of tumor necrosis factor alpha and interferon-gamma.

15. An *Echinacea* preparation comprising:
a standardized concentration of chicoric acid; and
an augmented level of immune-stimulatory activity;
wherein the preparation was obtained from a plant harvested during the vegetative stage.

16. The preparation of claim 15, wherein the augmented level of immune stimulatory activity is measured by inducement in THP-1 cells of an mRNA transcript selected from the group consisting of: IL-1 alpha, IL-1 beta, IL-6, IL-8, IL-10, tumor necrosis factor alpha, interferon-gamma and macrophage inflammatory protein-1.

17. The preparation of claim 15, wherein the augmented level of immune stimulatory activity is measured by inducement in THP-1 cells of an mRNA transcript selected from the group consisting of tumor necrosis factor alpha and interferon-gamma.

18. An *Echinacea* preparation comprising:
a standardized concentration of chicoric acid,
wherein the preparation induces an augmented level of immune-stimulatory activity; and

wherein the preparation was obtained from a plant harvested during a vegetative stage.

19. The preparation of claim 18, wherein the augmented level of immune-stimulatory activity is measured by inducement in THP-1 cells of an mRNA transcript selected from the group consisting of: IL-1 alpha, IL-1 beta, IL-6, IL-8, IL-10, tumor necrosis factor alpha, interferon-gamma and macrophage inflammatory protein-1.

20. The preparation of claim 18, wherein the augmented level of immune-stimulatory activity is measured by inducement in THP-1 cells of an mRNA transcript selected from the group consisting of tumor necrosis factor alpha and interferon-gamma.

21. A preparation of *Echinacea purpurea* comprising:
a standardized level of chicoric acid of at least about 3.49 percent as measured by HPLC analysis;
wherein the preparation provides an augmented immune-stimulatory response in THP-1 cells of at least 100 times.

22. The preparation of claim 21 wherein the augmented immune-stimulatory response is measured by inducement in the cells of an mRNA transcript selected from the group consisting of tumor necrosis factor-alpha and interferon-gamma.